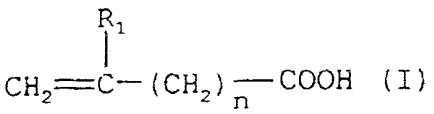
CLAIMS

1. Process for preparing an electrical cable comprising at least one conductor and at least one layer of extruded insulating coating, which includes:

- coating, by extrusion, the conductor with a polymeric composition comprising a polyethylene, a radical initiator and at least one unsaturated carboxylic acid of general formula (I) in free form:



(I)

in which:

- R_1 represents H or CH_3;
- n represents 0 or 1;

said unsaturated carboxylic acid being present in an amount of between 0.0006% and 0.25% by weight, said amount being expressed as the weight content of -COOH groups relative to the total weight of the polymeric composition;

- heating the conductor thus coated so as to obtain cross-linking of said polymeric composition.

2. Process according to Claim 1, in which the unsaturated carboxylic acid of general formula (I) is present in an amount of between 0.02% and 0.15% by weight, said amount being expressed as the weight content of -COOH groups relative to the total weight of the polymeric composition.

3. Process according to Claim 1 or 2, in which the radical initiator is present in an amount of between 0.5 and 5 parts by weight per 100 parts by weight of the polymeric composition.

4. Process according to Claim 3, in which the radical initiator is present in an amount of between

1.5 and 3 parts by weight per 100 parts by weight of the polymeric composition.

5. Process according to any one of the preceding claims, in which the unsaturated carboxylic acid of general formula (I) is added to the polyethylene in the form of granules.

6. Process according to any one of the preceding claims, in which the unsaturated carboxylic acid of general formula (I) is mixed with the polyethylene directly in the extruder cylinder.

7. Process according to any one of the preceding claims, in which the polyethylene is an ethylene homopolymer or a copolymer of ethylene with at least one α-olefin having a density of between 0.860 g/cm^3 and 0.940 g/cm^3.

8. Process according to Claim 7, in which the α-olefin is an olefin of general formula CH_2=CH-R in which R represents a linear or branched alkyl group containing from 1 to 10 carbon atoms.

9. Process according to Claim 8, in which the α-olefin is chosen from: propylene, 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene and 1-dodecene, and the like.

10. Process according to any one of the preceding claims, in which the polyethylene is chosen from: medium density polyethylene having a density of between 0.926 g/cm^3 and 0.940 g/cm^3; low density polyethylene and linear low density polyethylene having a density of between 0.910 g/cm^3 and 0.926 g/cm^3.

11. Process according to any one of the preceding claims, in which the radical initiator is an organic peroxide.

12. Process according to Claim 11, in which the organic peroxide is chosen from: dicumyl peroxide, t-butylcumyl peroxide, 2,5-dimethyl-2,5-di(t-butyl-peroxy)hexane, di-t-butyl peroxide.

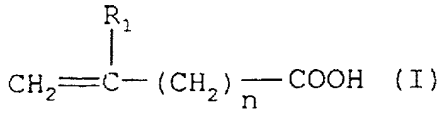
13. Process according to any one of the preceding claims, in which the unsaturated carboxylic acid of

general formula (I) is chosen from: acrylic acid and vinyl acetic acid.

14. Process according to Claim 13, in which the unsaturated carboxylic acid of general formula (I) is acrylic acid.

15. Electrical cable obtained according to the process described above.

16. Electrical cable comprising at least one conductor and at least one extruded insulating coating layer consisting of a polymeric composition comprising a polyethylene grafted with at least one unsaturated carboxylic acid of general formula (I):



in which:

- R_1 represents H or CH_3;
- n represents 0 or 1;

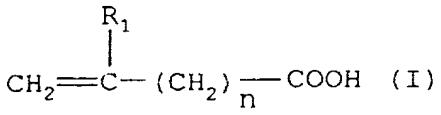
said unsaturated carboxylic acid being present in an amount of between 0.0006% and 0.25% by weight, said amount being expressed as the weight content of -COOH groups relative to the total weight of the polymeric composition.

17. Electrical cable according to Claim 16, in which the polyethylene is defined according to any one of Claims 7 to 10.

18. Electrical cable according to Claim 16 or 17, in which the radical initiator is defined according to Claim 11 or 12.

19. Electrical cable according to any one of Claims 16 to 18, in which the unsaturated carboxylic acid is defined according to Claim 13 or 14.

20. Polymeric composition comprising a polyethylene, a radical initiator and at least one unsaturated carboxylic acid of general formula (I) in free form:



(I)

in which:

- R_1 represents H or CH_3;
- n represents 0 or 1;

said unsaturated carboxylic acid being present in an amount of between 0.0006% and 0.25% by weight, said amount being expressed as the weight content of -COOH groups relative to the total weight of the polymeric composition.

21. Polymeric composition according to Claim 20, in which the polyethylene is defined according to any one of Claims 7 to 10.

22. Polymeric composition according to Claim 20 or 21, in which the radical initiator is defined according to Claim 11 or 12.

23. Polymeric composition according to any one of Claims 20 to 22, in which the unsaturated carboxylic acid is defined according to Claim 13 or 14.